

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (Previously Presented): A method of manufacturing an LDMOS transistor comprising:

providing a semiconductor substrate of a first conductivity type having a well region of a second conductivity type formed on a surface thereof;

implanting ions of the first conductivity type into a part of the well region;

forming a gate oxide layer on the surface of the semiconductor substrate, said forming the gate oxide layer including subjecting the semiconductor substrate to a heat treatment so that the implanted ions are diffused to form a diffusion region of the first conductivity type on the surface of the semiconductor substrate;

forming a gate electrode on the surface of the semiconductor substrate; and

forming a drain region on the surface of the semiconductor substrate, wherein said implanting ions is carried out with an energy set so that an accelerated oxidation during said forming the gate oxide layer is inhibited.

Claim 2 (Currently Amended): A method of ~~manufacturing~~ manufacturing an LDMOS transistor according to claim 1, wherein said implantation is conducted as a high energy

ion implantation with an energy amount that is about 500 keV.

Claim 3 (Canceled)

Claim 4 (original): A method of manufacturing an LDMOS transistor according to claim 1, wherein said implantation is conducted with a dosage of about $5.0 \times 10^{15}/\text{cm}^2$.

Claim 5 (Previously Presented): A method of manufacturing an LDMOS transistor according to claim 1, wherein said implantation is conducted into a region of the semiconductor substrate where the drain region is formed.

Claim 6 (Original): A method of manufacturing an LDMOS transistor according to claim 1, wherein the drain region is a reduced surface drain.

Claim 7 (Currently Amended): A method of manufacturing an LDMOS transistor comprising:

providing a semiconductor substrate of a first conductivity type having a first well region of a second conductivity type formed on a surface thereof, and a second well region of the first conductivity type formed within the first well region;

implanting ions of the second conductivity type into a part of the second well region;

forming a gate oxide layer on the surface of the semiconductor substrate,
said forming the gate oxide layer including subjecting the semiconductor substrate to a heat treatment so that the implanted ions are diffused to form a diffusion region of the second conductivity type on the surface of the semiconductor substrate within the second well region;

forming a gate electrode on the surface of the semiconductor substrate; and
forming a drain region on the surface of the semiconductor substrate,
wherein said implanting ions is carried out with an energy set so that an accelerated oxidation during said forming the gate oxide layer is inhibited.

Claim 8 (Currently Amended): A method of manufacturing an LDMOS transistor according to claim 7, wherein said implantation is conducted as a high energy ion implantation with an energy amount that is about 500 keV.

Claim 9 (Canceled)

Claim 10 (Original): A method of manufacturing an LDMOS transistor according to claim 7, wherein said implantation is conducted with a dosage of about $5.0 \times 10^{15}/\text{cm}^2$.

Claim 11 (Previously Presented): A method of manufacturing an LDMOS transistor according to claim 7, wherein said implantation is conducted into a region of the

semiconductor substrate where the drain region is formed.

Claim 12 (Original): A method of manufacturing an LDMOS transistor according to claim 7, wherein the drain region is a reduced surface drain.

Claim 13 (Currently Amended): A method of manufacturing an LDMOS transistor comprising:

providing a semiconductor substrate of a first conductivity type having a first well of a second conductivity type formed on a surface thereof within a first region, and a second well of the first conductivity type formed within a second region that is inside of the first region;

implanting ions of the second conductivity type into the second well;

forming a gate oxide layer on the surface of the semiconductor substrate,

said forming the gate oxide layer including subjecting the semiconductor substrate to a heat treatment so that the implanted ions are diffused to form a diffusion region of the second conductivity type located in a third region that is inside of the second region;

forming a gate electrode on the surface of the semiconductor substrate, the gate ~~oxide layer~~ electrode extending from the first region to the third region through the second region; and

forming a drain region on the surface of the semiconductor substrate within the

first region,

wherein said implanting ions is carried out with an energy set so that an accelerated oxidation during said forming the gate oxide layer is inhibited.

Claim 14 (Currently Amended): A method of manufacturing an LDMOS transistor according to claim 13, wherein said implantation is conducted as a high energy ion implantation with an energy amount that is about 500 keV.

Claim 15 (Canceled):

Claim 16 (Original): A method of manufacturing an LDMOS transistor according to claim 13, wherein said implantation is conducted with a dosage of about $5.0 \times 10^{15}/\text{cm}^2$.

Claim 17 (Previously Presented): A method of manufacturing an LDMOS transistor according to claim 13, wherein said implantation is conducted into a region of the semiconductor substrate where the drain region is formed.

Claim 18 (Original): A method of manufacturing an LDMOS transistor according to claim 13, wherein the drain region is a reduced surface drain.

Claim 19 (New): A method of manufacturing an LDMOS transistor comprising:

providing a semiconductor substrate of a first conductivity type having a first well region of a second conductivity type formed therein and a second well region of the first conductivity type formed in the first well region;

implanting ions of the second conductivity type into a part of the second well region;

forming a gate oxide layer on a surface of the semiconductor substrate,
said forming the gate oxide layer including subjecting the semiconductor substrate to a heat treatment so that the implanted ions are diffused to form a diffusion region of the first conductivity type on the surface of the semiconductor substrate as a source region;

forming a gate electrode extending from on a part of the source region to a part of the second well region excluding the source region; and

forming a drain region on the surface of the semiconductor substrate at an area excluding the second well region by using a resist layer and the gate electrode as a mask,

wherein said implanting ions is carried out with an energy set so that an accelerated oxidation during said forming a gate oxide layer is inhibited, and so that the impurity ions of the second conductivity type are diffused into the surface of the semiconductor substrate due to the heat treatment.